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<b>TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT</b> (Under 37 CFR 1.97(d))	Docket No. <b>R.305558</b>
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In Re Application Of:

Sebastian KANNE et al.

Application No. <b>10/559,710</b>	Filing Date <b>December 7, 2005</b>	Examiner <b>Trevor E. McGraw</b>	Customer No. <b>02119</b>	Group Art Unit <b>3752</b>	Confirmation No. <b>1888</b>
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Title:

**INJECTOR FOR FUEL INJECTION SYSTEMS OF INTERNAL COMBUSTION ENGINES, ESPECIALLY DIRECT-INJECTION DIESEL ENGINES**

Address to:  
**Commissioner for Patents**

The Information Disclosure Statement submitted herewith is being filed after the period specified in 37 CFR 1.97(c), and on or before payment of the issue fee, and is accompanied by the Statement as specified in 37 CFR 1.97(e) and the fee set forth in 37 CFR 1.17(p).

- ☐ A check in the amount of \_\_\_\_\_ is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. 07-2100 as described below.
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Signature  
**Ronald E. Greigg**  
Registration No. 31,517

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Dated: November 16, 2007

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Application No. : 10/559,710 Confirmation No. 1888  
Applicant(s) : Sebastian KANNE et al.  
Filed : December 7, 2005  
TC/A.U. : 3752  
Examiner : Trevor E. McGraw  
Docket No. : R.305558  
Customer No. : 02119

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Date: November 16, 2007

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97(d),  
AND EXPLANATION OF THE RELEVANCE OF THE CITED PRIOR ART**

Sir:

The undersigned hereby requests that the prior art cited on the attached prior art statement be placed of record in the application file.

This citation of prior art is made under 37 CFR 1.97(d), since it is being filed after the mailing date of a Final Action, and is being accompanied by the fee of \$180 as set forth in 37 CFR 1.17(p).

The undersigned asserts that each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.

The relevance of the prior art cited on the attached form PTO/SB/08a is as follows:

#### **DE 101 51 688 A1**

The invention relates to a valve for controlling liquids, especially in an injection valve of an internal combustion engine. Said valve comprises a housing (20) having a system area (21) in which a piezoelectric actuator module (22) and a hydraulic coupler module (23) are arranged. Said coupler module has a control plunger (24) that is impinged upon by the actuator module (22) and an actuating plunger (30) cooperating with the control plunger (24) by means of a hydraulic chamber (28). The actuating plunger is connected to a valve closing member (31) cooperating with a valve seat (37), wherein the control plunger (24) and the actuating plunger (30) define the hydraulic chamber (29) and system pressure for refilling the hydraulic chamber (29) prevails in the system area (21), an evacuation channel (38) branching off from said system area. The system area (21) is impinged upon with a fluid by means of an evacuation channel (38).

#### **EP 1 174 615 A2**

This invention shows a fuel injector comprising a valve member (12) which is engageable with a valve seating to control fuel delivery from the injector, an actuator arrangement (28) and an amplifier arrangement (34, 62) for transmitting movement of the actuator arrangement to the valve member (12). The amplifier arrangement comprises a piston member (34) with which the actuator arrangement is cooperable to apply a retracting force to the piston member (34), and a control chamber (62) for fluid. The amplifier arrangement preferably comprises mechanical coupling means (48, 50, 52; 12b, 35a) for coupling movement of the piston member (34) to the valve member (12) upon application of an initial retracting force to the piston member (34). The amplifier arrangement is arranged such that, upon application of the initial retracting force, the valve member (12) is caused to move with the piston member (34) away from the valve seating, movement of the valve member (12) being decoupled from the piston member (34) following initial movement of the valve member (12) away from the valve seating so as to provide variable amplification of movement of the actuator arrangement to the valve member (12).

#### **JP 8-506883**

This invention shows the metering system has a chamber (KA1) formed by the large dia. piston (DK) and the cylinder bore. A second chamber (KA2) is formed by a bore in the large dia. piston (DK) and the small dia. piston (HK) movable in the bore of the large dia. piston. The first and the second chambers (KA1, KA2) are filled with hydraulic fluid standing under pressure. A pressure storage (SP) is provided for suppressing the cavitation effects. The actuator (P) can be a piezoelectric, magneto- or electrostrictive powered unit. Exact dosing of smallest fuel amounts for suction air. Facilitates extremely short opening and closing times of 0.1 to 0.2 ms, valve needle is not affected by temperature fluctuations.

#### **JP 61-272464**

This invention shows a fuel injection nozzle for internal combustion engines, with a closing spring-loaded valve needle (44) and a piston (24) enclosing the valve needle (44), which piston is subjected to the fuel pressure and acts on the valve needle (44) in the opening direction. According to the invention this is performed by way of a fuel cushion (64) which is connected by way of a throttle duct (56) with a reservoir chamber (50). The piston (24) may advantageously also control an inlet cross-section (30) leading into the fuel pressure chamber (26) of the injection nozzle as a function of the travel. By corresponding co-ordination of the parts it is possible to prolong the injection period when idling and thereby to reduce the

engine noise, whereas with the full load quantity the extension of the injection time is withdrawn, thereby reducing the fuel consumption.

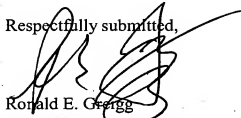
**JP 2000-161175**

The purpose of this invention is to improve the high-speed responsiveness by providing a piezoelectric element of solid structure for driving a plunger and a bulkhead for isolating the piezoelectric element from fuel, and arranging a fuel inlet part to an injector in a position backward from the piezoelectric element when seen from the plunger. A laminated type solid element is used as a piezoelectric element 11, the piezoelectric element 11 is supported by a movable member (damper) 16, and the piezoelectric element 11 and the movable member 16 are arranged in the area filled with high viscosity silicone oil, which is surrounded by inner pipes 12, 31 and a diaphragm (bulkhead) 15. Fuel is supplied from a fuel inlet part 33 arranged backward from the piezoelectric element 1 to the tip of an injector through a part between outer pipes 13, 32 forming the housing and the inner pipes 12, 31 and through a fuel through-hole 19. A plunger 14 is pressed onto the injector tip by the extending motion of the piezoelectric element 11 to close it, and the plunger 14 is further moved by the force of a spring 25 by the contracting motion of the piezoelectric element 1 to open it.

The Commissioner is hereby authorized to charge payment of the fee of \$180, or any/all fees associated with this communication to Deposit Account 07-2100.

Examination of this application is respectfully requested.

Respectfully submitted,



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Enclosures

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